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RESEARCH ARTICLE

A Novel Liquid Chromatography-Tandem Mass Spectrometry Method for Estimation of Solriamfetol: An Application to Spiked Human Plasma

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ABSTRACT

Solriamfetol, an emerging drug for the treatment of excessive daytime sleepiness along with narcolepsy and obstructive sleep apnoea. It acts as a dopamine and norepinephrine reuptake inhibitor. The present study aimed to develop a liquid chromatography-tandem mass spectrometry (LC-MS/MS) method for the estimation of Solriamfetol in spiked human plasma, using 13-C Solriamfetol as an internal standard (IS). All the chromatographic conditions were optimized to obtain a sharp, symmetrical peak of Solriamfetol in a chromatographic run. The chromatographic conditions include 0.1% formic acid and acetonitrile (30:70) as the mobile phase, a C18 column as the stationary phase. Multiple reaction monitoring mode was selected for ionization and fragmentation, and the maximum sensitivity was achieved in the mass spectrometer. The results of validation parameters showed the developed method as precise, accurate, and robust. The linearity concentration is in the range of 5.0–5220.0 ng/mL with a correlation coefficient of 0.9980. All the stability showed the method's reliability under various conditions. The developed method was successfully applied to spiked human plasma samples and can be further useful for pharmacokinetic profiling. This approach employs a deuterated IS, which provides more accuracy and reduces matrix effects compared with existing LC-MS and high-performance LC methods. This method addresses the need for a sensitive and selective analysis of Solriamfetol, providing valuable insights into its pharmacological profile for the treatment of sleep-related disorders.

Conflicts of Interest